

The Netherlands as a green hydrogen hub: government presents views on future of hydrogen

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Introduction

Clean hydrogen is widely considered to be an important part of the future energy mix. It has great **potential** to contribute to the reduction of CO₂ emissions in, for example, the industrial, agricultural and transport sectors, which still largely depend on the availability of gases for their energy supply.

The government considers green (ie, carbon-free) hydrogen to be essential for achieving its energy transition goals and maintaining energy-intensive industries and wishes to improve the business climate for green hydrogen in the Netherlands. As such, the government recently presented its policy agenda for hydrogen.

Outlook on Hydrogen

On 30 March 2020 the minister of economic affairs and climate policy published the government's [Outlook on Hydrogen](#), in which he set out the government's medium and long-term policy objectives in this respect. **(1)** The development of a green hydrogen policy is part of a larger set of measures to reduce CO₂ emissions by 49% by 2030 and 95% by 2050 (with 1990 as the benchmark year), as agreed by the government, industry representatives and non-government organisations in the national Climate Agreement of 28 June 2019 (for further details please see "[New Milestones to Combat Climate Change](#)"). **(2)** The minister suggests that in 2050, gaseous energy carriers (eg, green hydrogen) could amount to between 30% to 50% of the country's total energy usage.

It was agreed in the Climate Agreement that the Netherlands will launch a national hydrogen programme, which will primarily focus on:

- unlocking the supply of green hydrogen;
- developing the necessary infrastructure; and
- cooperating with various sector programmes, initiatives and projects.

The programme aims to have achieved 3GW to 4GW of installed electrolyser capacity by 2030, the development of which must be consistent with the additional growth of renewable electricity. **(3)**

The government's Outlook on Hydrogen has four major pillars:

- legislation and regulation to further facilitate a hydrogen market;
- a reduction in the production costs of green hydrogen via instruments such as the existing SDE++ and DEI+ subsidy schemes (for further details please see "[Broadening Subsidy Scheme for Renewable Energy: From SDE+ to SDE++](#)");
- the creation of a market for green hydrogen by increasing demand and the implementation of the EU Renewable Energy Directive ([RED II](#)); and
- supporting policies, such as an international strategy, regional policies and research and innovation.

Overall, the government sees many opportunities for green hydrogen and believes that a scale-up of green hydrogen supply would be best achieved by public-private cooperation. The government also acknowledges the important role of international cooperation. This is in line with the view of the European Commission, which [announced](#) the launch of a European Clean Hydrogen Alliance – an

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EU-wide industrial alliance of investors with governmental, institutional and industrial partners – in its 10 March 2020 communication "[A New Industrial Strategy for Europe](#)".

This article discusses the regulatory and policy plans for the future of green hydrogen in the Netherlands, as set out in the government's outlook.

Scale-up of green hydrogen sector and required infrastructure

The first phase of the scale-up of the green hydrogen sector is to reduce production costs and expand the current production installations. Further, preparations for the required infrastructure must be made early on, due to long lead times.

The government expects the hydrogen sector to become a regulated network sector similar to the electricity and natural gas sectors, with a natural local monopolist that will construct and maintain a network for the transportation and distribution of hydrogen. The government is conducting research into the possibilities of using the existing gas networks for the transportation of hydrogen and implies that it sees a leading role for the operator of the national gas network, Gasunie. The regional distribution system operators will also be involved – as will TenneT, the operator of the national high-voltage grid – in order to coordinate the development of new infrastructure.

The existing gas infrastructure in the Netherlands is well connected to neighbouring states and potentially suitable for transporting hydrogen. From the government's perspective, this places the Netherlands in a good position to take up the role of a regional, northwestern European hub for the supply of hydrogen. The port of Rotterdam is considered a potential entry point for hydrogen from the global market.

Large offshore wind farms that are being developed in the North Sea could complement this role by producing green hydrogen (by electrolysis) on a large scale, which would contribute to the creation of a green hydrogen market. In turn, this could contribute to a more stable supply of renewable energy and could also help to tackle the congestion problem on the electricity networks resulting from the increasing electrification of the economy. The government is researching whether combined public tenders for offshore wind and hydrogen production could be advantageous (the transport of green hydrogen might be cheaper than the transport of electricity to the shore). TNO, a public research organisation, is conducting an experiment in this respect.

The government, together with the national gas and electricity network operators and the port of Rotterdam, is researching how to further develop the infrastructure for hydrogen.

Guarantees of origin, investment aid and subsidies

In order to facilitate a green hydrogen market, a conclusive system of guarantees of origin and certification is required. On the basis of RED II, the development of a guarantees-of-origin system is obligatory. This will to some extent be a European project, since mutual alignment between member states is required. Vertogas, the public body responsible for issuing guarantees of origin for green gas, will develop the required system.

In the national Climate Agreement, the stakeholders have formulated an ambition to scale-up electrolysis to 500MW in 2025 and 3GW to 4GW in 2030. However, for the time being, there is a considerable unprofitable portion in producing green hydrogen. Many projects are in a transition phase between pilots (DEI+ subsidy scheme) and competing with other options for CO₂ reduction in the roll-out phase (SDE++ subsidy scheme). Therefore, the government will present a new, temporary instrument for investment aid in order to scale-up and reduce the costs of green hydrogen. From 2021, the government will invest €35 million annually in green hydrogen. This budget will be made partly available by reorganising the DEI+ for hydrogen pilots.

The production of green hydrogen by electrolysis will be included in the SDE++ subsidy scheme in 2020. One large-scale green hydrogen project is [Project H2ermes](#), a collaboration between Tata Steel, Nouryon and the port of Amsterdam pertaining to a future 100MW green hydrogen plant in IJmuiden.

The production of blue hydrogen (by which CO₂ will be captured and stored (and reused) (CCS/CCUS)) is also included in the SDE++ subsidy scheme. An important large-scale blue hydrogen project is [Project Porthos](#), which focuses on CCUS pertaining to the existing hydrogen production of plants located in the Rotterdam harbour.

By scaling up, the government expects that the production costs of green hydrogen will be reduced by 50% to 60% over the next 10 years.

Dutch regulatory framework for hydrogen

The Netherlands is Europe's largest producer of grey hydrogen (hydrogen that is produced with natural gas) after Germany. Hydrogen is also already being mixed with natural gas and transported through existing gas pipelines, albeit on a small scale.

Under existing regulations, the injection of hydrogen up to 0.5% is allowed in the regional gas distribution systems. With minor changes, this could be increased to 2% and possibly more. The government is discussing this with the network operators and large industrial users. The government is also looking into the possibility of the compulsory injection of green hydrogen (physically or by means of certificates) in order to create a demand for green hydrogen.

The government wishes to further explore the possibilities to experiment and scale-up green hydrogen within the existing regulatory framework for gas. The Electricity Act, the Gas Act and the Mining Act contain various provisions that currently restrict certain market participants with respect to hydrogen – in particular, state energy subsidiary EBN (under the Mining Act) and companies within a group that also contains a network operator of electricity or gas networks (under the Electricity Act and the Gas Act).

Pursuant to the Electricity Act and the Gas Act, the ring-fenced network operators may provide only the connection and transport services for which they receive regulated tariffs set by regulator ACM. Companies with the same corporate group as a network operator may engage only in a limited number of prescribed activities, including the construction and operation of infrastructure for hydrogen. However, the minister of economic affairs and climate policy can allow network companies to carry out additional experimental activities. Such new activities could encompass the cooperation of network companies with other market participants to explore the possibilities and identify potential issues with regard to the production, transport and use of hydrogen. This tool is particularly well suited for the early stages of development and fits the public-private cooperation approach as envisaged by the government. Moreover, the minister can assign network companies additional, temporary tasks for a maximum of five years. These tasks must:

- be related to their regulated activities;
- be of importance to the future operation of the gas network; and
- not be carried out by other market participants.

The minister of economic affairs and climate policy has announced that he is working on temporary task measures that are expected to be published in 2020, but no further details have yet been given.

Comment

The clean hydrogen market is developing, but it appears that it is still too early for extensive market regulation in the Netherlands. For now, the existing gas legislation sufficiently covers the hydrogen market. It allows the government to facilitate pilots and experiments and assign temporary tasks to network operators in the regulated gas market. Other existing instruments, such as the SDE++ subsidy scheme, will be used to complement the scale-up of green hydrogen.

Once the market for hydrogen has developed further – on a national, European and international level – it will become clear whether the existing regulatory framework of the gas market is fit for purpose or whether new legislation is required.

The discussions, studies, research and measures that the minister of economic affairs and climate policy announced in the outlook of 30 March 2020 must still be translated into concrete plans and proposals. However, the outlook shows that the government sees a bright future for green hydrogen and that the necessary groundwork for a scale-up of the Dutch green hydrogen market has started.

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Endnotes

- (1) An English version of 'Outlook on Hydrogen' is available [here](#).
- (2) See the hydrogen chapter of the [Climate Agreement](#).
- (3) Ministry of Economic Affairs and Climate Policy, "[Integrated National Energy and Climate Plan \(2021-2030\), the Netherlands](#)", November 2019.

